Oxford Cambridge and RSA

OCR-set Assignment

Sample Assessment Material

OCR Level 3 Alternative Academic Qualification Cambridge Advanced Nationals in IT: Data Analytics

Unit F203: Relational database design

Scenario Title: Westwood Data Management

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Valid for assessment from September 20XX to 20XX.
For use by students beginning the qualification in September 20XX.

This is a sample OCR-set assignment which should only be used for practice**.**

This assignment **must not** be used for live assessment of students.

The live assignments will be available on our secure website, 'Teach Cambridge'.

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The OCR administrative codes linked to this unit are:

- unit entry code F203
- certification code H119

The regulated qualification number linked to this unit is:

D/651/0970 610/3997/4

Duration

About 15 hours of supervised time (GLH)
(work that **must** be completed under teacher supervised conditions)

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Information and instructions for teachers

Using this assignment

This assignment provides a scenario and set of related tasks that reflect how people working in organisations may have their work performance monitored.

You can give this to students on or after 1 June 202X to help them understand it before they start using it for assessment. The dates for which students can use it for assessment are shown on the front cover.

The assignment:

- Is written so that students have the opportunity to meet the requirements of all assessment criteria for the unit.
- Will tell students if their evidence must be in a specific format. If the task does not specify a format, students can choose the format to use.
- **Must** be completed under teacher supervision. Any exceptions to this will be stated in the assessment guidance.

We have estimated that the assignment will take about 15 hours to complete. Students should need approximately:

- 5 hours to complete Task 1
- 5 hours to complete Task 2
- 3 hours to complete Task 3
- 2 hours to complete Task 4

You **must**:

- Use an OCR-set assignment for summative assessment of students.
- Familiarise yourself with the assessment criteria and assessment guidance for the tasks. These are given at the end of each student task. They are also with the unit content in **Section 5** of the Specification.
  Assessment guidance is only given where additional information is needed. There might not be assessment guidance for each criterion.
- Make sure students understand that the assessment criteria and assessment guidance tell them in detail what to do in each task.
- Read and understand **all** the rules and guidance in **Section 7** of the Specification **before** your students start the set assignments.
- Make sure that your students complete the tasks and that you assess the tasks fully in line with the rules and guidance in **Section 7** of the Specification.
- Give your students the **IT: Data Analytics Student guide to NEA assignments before** they start the assignments.

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You **must not**:

- Use live OCR-set assignments for practice or formative assessment. This sample assessment material **can** be used for practice or formative assessment.
- Use this sample assessment material for live assessment of students.
- Allow group work for **any** task in this assignment.
- Change any part of the OCR-set assignments or assessment criteria.

Pages 1-4 are for teachers only. Please do **not** give **Pages 1-4** to your students.

You can give **any** or **all** of the pages **that follow** to your students.

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Tasks for students and assessment criteria

Unit F203: Relational database design

Scenario Title: Westwood Data Management

Valid for assessment from September 20XX to 20XX
For use by students beginning the qualification in September 20XX.

Scenario

The owner of Westwood Data Management wants a relational database to record staff performance data. The database will provide easy access to data about staff performance.

The database will need to allow the owner of Westwood Data Management to:

1. Use forms to allow:
   - details for a new member of staff to be added to the database
   - staff details to be updated, e.g. job role changes, performance grades or staff leaving the organisation

2. Run the following simple queries:
   - a staff directory containing the staff names in alphabetical order by last name, the job role and the telephone number
   - a staffing summary that shows the number of staff employed in each job role

3. Run the following complex queries:
   - the bonus to be paid to each member of staff based on their performance grade (details below)
   - the number of full years that a member of staff has been in their current job role

4. View the output of queries in a suitable format

5. Use a switchboard to navigate the database

Information

There are a number of different job roles at Westwood Data Management, such as data analyst and data engineer.

Each member of staff has one job role at any time. A staff member might have had more than one job role during their employment at Westwood Data Management.

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Some staff members might no longer be employed by Westwood Data Management.

Each member of staff gets a performance grade each year. The performance grades are:

- A - Excellent
- B - Satisfactory
- C - Poor

The data that you need to work with is on **Page 7**.

Database Requirements

A record for a member of staff must **not** save in the database if:

- the staff last name is **not** present
- the staff first name is **not** present
- the email address is **not** in the correct format
- the contact telephone number is **not** in the correct format
- the staff leaving date is in the future

All forms for data input must open at a blank record.

Members of staff get a bonus payment depending on their performance grade:

- the bonus payment for Excellent (A) is £1000
- the bonus payment for Satisfactory (B) is £200
- there is no bonus payment for Poor (C)

The correct bonus payment must be calculated for each member of staff.

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Staff data

Staff ID	First Name	Last Name	Current Performance Grade Description	Current Performance Grade ID	Staff Start Date (DD/MM/YYYY)	Staff Leaving Date	Job Role ID	Job Role Description	Job Role Start Date (DD/MM/YYYY)	Email Address	Contact Tel No
110	Alex	Singh	Excellent	A	1/4/2015		1	Senior Data Analyst	1/4/2015	alex@westwooddata.com	07700 900 254
111	Sara	Ashton	Satisfactory	B	1/5/2015		2	Data Architect	1/5/2015	sara@westwooddata.com	07700 900 255
112	Anika	Cruz	Poor	C	1/5/2015		3	Junior Data Analyst	1/5/2015	anika@westwooddata.com	07700 900 259
113	Ben	Anderson	Satisfactory	B	1/12/2015		5	Database Administrator	1/12/2015	ben@westwooddata.com	07700 900 261
113	Ben	Anderson	Satisfactory	B	1/12/2015		4	Data Engineer	1/9/2018	ben@westwooddata.com	07700 900 261
114	Yana	Lee	Excellent	A	1/3/2016	31/1/2018	5	Database Administrator	1/3/2016	yana@westwooddata.com	07700 900 314
115	Umi	Misri	Satisfactory	B	1/9/2017		2	Data Architect	1/9/2017	umi@westwooddata.com	07700 900 315
116	Hugo	Lesage	Excellent	A	1/2/2018		5	Database Administrator	1/2/2018	hugo@westwooddata.com	07700 900 361
117	Amit	Pisani	Poor	C	1/2/2018		3	Junior Data Analyst	1/2/2018	amit@westwooddata.com	07700 900 362
118	James	Nolan	Excellent	A	1/9/2020	31/2/2021	4	Data Engineer	1/9/2020	james@westwooddata.com	07700 900 254
119	Yoshi	Miyake	Poor	C	1/3/2022		1	Senior Data Analyst	1/3/2022	yoshi@westwooddata.com	07700 900 254

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Task 1

Plan a relational database solution

Topic Area 1 and Topic Area 2 are assessed in this task.

The task is:

Plan your database solution, using appropriate design tools and planning documentation. Use the data on **Page 7**.

Your evidence **must** include:

- An entity-relationship diagram.
- A data dictionary.
- Written reports.
- The other planning documentation you have created.

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P1: Create an entity relationship diagram (ERD) for the solution where data duplication is minimised and data integrity is maintained. (PO4)		
P2: Normalise the database to third normal form (3NF) using normalisation techniques. (PO4)		
P3: Create a data dictionary for the solution, using standard conventions. (PO4)	**M1: Identify** input masks and other methods to validate the data. (PO2)	**D1: Justify** the use of the chosen validation methods for the database solution. (PO3)
P4: Design the forms to be used for the solution. (PO2)		
P5: Describe simple queries to be used for the solution.	**M2: Describe** complex queries to be used for the solution.	

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(PO2)	(PO2)	
P6: Design the switchboard and navigation for the solution. (PO2)	**M3: Design** outputs to be used for the solution. (PO2)	**D2: Design** the macros required for the solution to work effectively. (PO2)

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Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
P1	• The entity relationship diagram for the solution **must** be notated to identify relationships
P2	• The database structure for the solution **must** be created to third normal form with an explanation relating to each stage of the normalisation process carried out. • The evidence **must** cover 0NF/UNF, 1NF, 2NF and 3NF.
P3	• All entities in the data dictionary solution **must** be atomic. • The data dictionary **must** include: **o** field name **o** data type **o** field size **o** format **o** default value **o** required (Y/N) **o** reference table if foreign key **o** identification of primary keys
M1	• Input masks and other methods **must** be defined for the relevant fields in the data dictionary.
D1	• There is no assessment guidance for this criterion.
P4	• The forms used for the solution **must** be designed with enough detail to allow someone else to implement the designs. • Sub-forms can be used as part of the solution. • The forms **must** clearly indicate user aids, such as indicating mandatory fields to be completed. • Designs can be hand drawn or produced electronically.
P5	• Queries **must** be related to the scenario. • At least one criterion **must** be used in each query. • Totals such as count, minimum/maximum, sum may be required for the output.
M2	• Queries **must** include the use of calculations. • Queries **must** require the use of multiple tables. • Queries might use parameters.
P6	• The solution **must** include a main menu/switchboard and navigation back to it. HCI considerations **must** be

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	included.
M3	• The outputs **must** be designed for screen and print output. Totals can form part of the output.
D2	• State the steps required within the macros clearly enough to allow someone else to create the macros. • For the solution to work effectively, students **must** plan for different macros to be used throughout the solution. • Users **must** be able to fully operate the solution using automated features only.

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Task 2

Create the relational database solution

Topic Area 3 is assessed in this task.

The task is:

Create the database solution using the planning from **Task 1** and the data on **Page 7**.

Your evidence **must** include:

- The database file you have created.

Do **not** apply a password to the database file.

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P7: Create the database structure and populate with data. (PO4)		
P8: Create simple queries required for the solution. (PO4)	**M4: Create** complex queries required for the solution. (PO4)	**D3: Create** the macros required for the solution to work effectively. (PO4)
P9: Create the forms required for the solution. (PO4)	**M5: Create** outputs required for the solution. (PO4)	
P10: Create the switchboard and navigation required for the solution. (PO4)		

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Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
In **Task 2**, ideally students will follow the plans they made in **Task 1**. However, if students deviate from their plans they must not be penalised when assessing **Task 2**.	
P7	• Students **must** create the planned database structure using the data provided to populate the database tables.
P8	• There is no assessment guidance for this criterion.
M4	• There is no assessment guidance for this criterion.
P9	• There is no assessment guidance for this criterion.
M5	• There is no assessment guidance for this criterion.
P10	• A start-up menu/switchboard **must** load when the database is loaded. • The navigation techniques used within the solution **must** be effective. • House style **must** be incorporated in the navigation system. • Evidence **must** be the database file.
D3	• There is no assessment guidance for this criterion.

Advice

- Effective testing is started during the creation of the relational database.

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Task 3

Testing the relational database solution

Topic Area 4 is assessed in this task.

The task is:

Test the database solution to ensure that it meets the needs of the owner of Westwood Data Management.

Your evidence **must** include:

- Your completed test plan. Use the test plan template provided.
- Written analysis and evidence of resolving errors (if necessary).

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P11: Test the database solution against the database requirements. (PO4)	**M6: Analyse** the test outcomes and, if necessary, **resolve** any errors in the database solution. (PO3)	

Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
P11	• Ideally, students will use the test plan template provided. However, if students use a different template which is appropriate for the task, they must **not** be penalised for doing so. • Students **must** test their solution against all the database requirements in the scenario.
M6	• If errors have been discovered during testing, the evidence **must** show these errors and how the errors have been corrected. • If the student has carried out the analysis and no errors have been discovered, the mark **must** still be awarded.

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Advice

- You do **not** need to undertake tests that have **not** been included in the database requirements.
- Screenshots of testing should be clear and easy to read.

Task 4

Evaluation of the relational database solution

Topic Area 5 is assessed in this task.

The task is:

Evaluate the database solution you created for the owner of Westwood Data Management and the planning processes you followed.

Your evidence **must** include:

- Your evaluation document.

Use the assessment criteria below to tell you what you need to do in more detail.

Pass	Merit	Distinction
P12: Compare the database solution with the client's requirements. (PO3)	**M7: Explain** how the database solution meets the client's requirements. (PO3)	**D4: Evaluate** how successful the solution is in relation to design intentions. (PO3)
		D5: Evaluate the planning processes followed and suggest improvements that could be made for a similar project in the future. (PO3)

Assessment Guidance

This assessment guidance gives you information to meet the assessment criteria. There might not be additional assessment guidance for each criterion. It is only given where it is needed. You must read this guidance before you complete your evidence.

Assessment Criteria	Assessment guidance
P12	• There is no assessment guidance for this criterion.

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M7	• There is no assessment guidance for this criterion.
D4	• This criterion focuses on the solution itself.
D5	• This criterion focuses on the process followed to create the solution.

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Template for **Task 3**

Test number	Test date	Test purpose	Test procedure	Expected result	Actual result	Remedial action needed	Retest result

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NEA Command Words

The table below shows the command words that may be used in the NEA assignments and/or assessment criteria.

Command Word	Meaning
Adapt	• Change to make suitable for a new use or purpose
Analyse	• Separate or break down information into parts and identify their characteristics or elements • Explain the different elements of a topic or argument and make reasoned comments • Explain the impacts of actions using a logical chain of reasoning
Assess	• Offer a reasoned judgement of the standard or quality of situations or skills. The reasoned judgement is informed by relevant facts
Calculate	• Work out the numerical value. Show your working unless otherwise stated
Classify	• Arrange in categories according to shared qualities or characteristics
Compare	• Give an account of the similarities and differences between two or more items, situations or actions.
Conclude	• Judge or decide something
Describe	• Give an account that includes the relevant characteristics, qualities or events
Discuss (how/whether/etc)	• Present, analyse and evaluate relevant points (for example, for/against an argument) to make a reasoned judgement
Evaluate	• Make a reasoned qualitative judgement considering different factors and using available knowledge/experience
Examine	• To look at, inspect, or scrutinise carefully, or in detail
Explain	• Give reasons for and/or causes of something • Make something clear by describing and/or giving information
Interpret	• Translate information into recognisable form • Convey one's understanding to others, e.g. in a performance
Investigate	• Inquire into (a situation or problem)
Justify	• Give valid reasons for offering an opinion or reaching a conclusion
Research	• Do detailed study in order to discover (new) information or reach a (new) understanding
Summarise	• Express the most important facts or ideas about something in a short and clear form

We might also use other command words but these will be:

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- commonly used words whose meaning will be made clear from the context in which they are used
- subject specific words drawn from the unit content.

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